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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/818,884	03/17/97	YAMAZAKI S	0756-1653

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EXAMINER
NGUYEN, T

ART UNIT PAPER NUMBER
2871

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/818,884

Applicant(s)
Yamazaki et al.

Examiner
Tiep Nguyen

Group Art Unit
2871



☒ Responsive to communication(s) filed on Aug 13, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-7, 9, 10, 13, 16-24, 26, 27, and 30-39 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-7, 9, 10, 13, 16-24, 26, 27, and 30-39 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 36

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Applicant's preliminary amendment dated 8/13/98 has been received entered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 13, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Applicant's submitted prior art Yamazaki'858.

The above claims are anticipated by Yamazaki's figures 3 and 8 which together disclose an LCD device comprising:

- two insulating glass substrates with a liquid crystal layer inherently interposed therebetween;
- one of the insulating substrate (50) having formed thereon:
 - an active matrix circuit (fig. 8) including at least one TFT (13 & 22, figure 3);
 - a driving circuit (1) including at least one TFT (CTFT, fig. 8) for driving the active matrix circuit; wherein the TFTs in this circuit and in the active matrix circuit are formed from the same process, thus exhibited the same structure and formed from a common semiconductor film formed over the insulating substrate (figure 8; col. 11, lines 7+);

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- a semiconductor control IC (4) mounted on the substrate for controlling the driving circuit and connected to the latter by COG.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 9, 10, 17-24, 26, 27, 30-3~~9~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's submitted prior art Yamazaki'858.

Regarding claims 17, 18, 20 & 30, Yamazaki discloses the claimed invention except for the semiconductor control IC being a single crystalline type. It is notoriously well known in the art that control circuits and driving circuits of an LCD device are typically of the single crystalline type. Therefore, it would have been obvious to use single crystalline semiconductor ICs for the control circuits (4) in Yamazaki because such use is conventional in the art and single crystalline material for channel regions of TFTs in ICs enhances the conductivity of the ICs.

Regarding claims 1, 3, 6, 21, 22, 26 & 31, the above modification to Yamazaki discloses the invention except for an extended portion on one of the insulating glass substrates for the semiconductor control IC to be formed thereon. It is notoriously well known in the art to have such extended portion on a designated one of the LCD substrates to provide sufficient real estate

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for the control circuits and driving circuits of the LCD. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide an extended portion to Yamazaki's substrate (50) on which control ICs (4) and driving circuits (1, 2) can be mounted for the following reason:

- the extended portion allows easy access in the fabrication of the driving circuits and placement of the control ICs on the substrate (50) since the opposite substrate would not cover such portion. Furthermore, the easy access allows for easy replacement of the ICs and driving circuits in the event any of them should subsequently become defective.

Regarding claims 2 & 19, the above modifications to Yamazaki disclose the claimed invention except for the use of wire bonding rather than COG to connect the semiconductor control ICs (4) to the driving circuits (1, 2). It is notoriously well known in the art to use wire bonding for electrical connection. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use wire bonding for the claimed electrical connection between the control ICs (4) and drivers (1, 2) because methods such as wire bonding, TAB, and COG are conventional methods for electrical connection in the art, and the use of one method over another merely reflects the desire of the manufacturer and/or the practical considerations involved in the fabrication of an LCD device such as the design of the overall device, ease of manufacturing, cost efficiency, etc.

Regarding claims 7, 27, 32 & 33, the above modifications to Yamazaki discloses the claimed invention except for the use of active matrix TFTs with lightly doped drains (LDD). It is

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notoriously well known in the art to use TFTs having LDD as switching elements in an LCD matrix circuit. Therefore, it would have been obvious to use TFTs having LDD in Yamazaki's active matrix circuit because such feature in the TFTs allows for faster switching speed and lower threshold voltages; thus, the overall display would exhibit better contrast with lower power consumption.

Regarding claims 4, 5, 9, 10, 34 & 35, the above modifications to Yamazaki disclose the claimed invention except for the semiconductor IC being either a memory or a CPU. One of ordinary skill in the art would have realized that the semiconductor ICs (4) can be a memory circuit, a processing circuit such as a CPU, or any other peripheral circuits needed for the operation of an LCD device. Therefore, it would have been obvious to one of ordinary skill in the art to provide a memory chip or CPU chip as the semiconductor control IC (4) because, once again, the type of chip to be positioned at the location of the IC (4) merely reflects the desire of the manufacturer and/or the practical considerations involved in the LCD fabrication process such as the design of the overall circuitry, ease of manufacturing, cost efficiency, space allocation, etc.

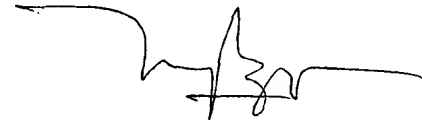
Regarding claims 23, 24 & 36-39, the above modifications to Yamazaki discloses the claimed invention except for the use of only either P-type or N-type TFT for the driving circuits (1, 2), or the different locations of the channel region of the TFTs in the driving circuit and control IC. One of ordinary skill in the art would have realized the feasibility of using P-type, N-type or complementary type TFTs, for the driving circuit, or using top-gate or reverse-staggered type TFTs for the driving circuit and/or active matrix circuit. Therefore, it would have been

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obvious to one of ordinary skill in the art at the time of the invention to use any one of those types of TFTs for the driving circuit and/or active matrix circuit and because the use of one method over another merely reflects the desire of the manufacturer and/or the practical considerations involved in the fabrication of an LCD device such as the design of the overall device, ease of manufacturing, cost efficiency, etc.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tieg Nguyen whose telephone number is (703) 305-3496.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1615.



Tieg H. Nguyen
Patent Examiner
Technology Center 2800